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Testimony

**Statement of
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Potential Costs of Health Care for Veterans of Recent and Ongoing U.S. Military Operations

**before the
Committee on Veterans' Affairs
United States Senate**

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Chairman Murray, Senator Burr, and Members of the Committee, thank you for the invitation to appear before you today to discuss the prospective demands that veterans returning from recent and ongoing military operations will place on the health care system of the Department of Veterans Affairs (VA). Those operations (overseas contingency operations, or OCO) are Operation Iraqi Freedom, which ended in August 2010; Operation New Dawn, the ongoing military engagement in Iraq; and Operation Enduring Freedom, in Afghanistan. My testimony, drawn primarily from the Congressional Budget Office's (CBO's) October 2010 study *Potential Costs of Veterans' Health Care*, addresses the costs that VA's health care system—the Veterans Health Administration (VHA)—could face in meeting those veterans' health care needs over the 2011–2020 period. (The results of that analysis presented here are slightly different from those in the report because CBO has updated all costs for the effects of inflation, converting them to 2011 dollars. All years referred to in this testimony are federal fiscal years, which run from October 1 to September 30.)

Summary

CBO's analysis of VHA's costs indicated the following:

- In 2010, VHA spent \$1.9 billion to treat 400,000 OCO patients. VHA obligated \$4,800 per OCO patient, on average, compared with an average of \$8,800 per patient for veterans from all eras who were being treated at VHA.¹ OCO veterans are typically younger and healthier than the average VHA patient and as a result are less expensive to treat; indeed, the amount of resources devoted to the average OCO veteran is similar to that devoted to the average non-OCO veteran under the age of 45. Thus, although OCO patients made up 7 percent of the veterans VHA treated in 2010, they were responsible for only 4 percent of the total amount that VHA obligated for medical care and research.
- The medical costs associated with VHA's treatment of OCO veterans could, in CBO's estimation, total between \$40 billion and \$55 billion over the 10-year period from 2011 through 2020, depending on the number of military personnel deployed to overseas contingencies in the future and the rate of growth of medical expenditures per person. That amount would be in addition to the \$6 billion that VHA had spent on OCO veterans' health care by the end of 2010. VHA is funded by annual discretionary appropriations (unlike Medicare, for example, which is funded by permanent appropriations); therefore, the estimated amounts would only be spent if lawmakers decided in the future to fully fund the care that OCO veterans are receiving from VHA under current policies.

The number of OCO veterans using VHA in the future, and the potential costs for treating them, are affected by the number and types of medical conditions that service members develop while deployed to overseas contingency operations. Consequently,

1. An obligation is a commitment that creates a legal liability on the part of the government to pay for goods and services ordered or received. Such payments may be made immediately or in the future.

CBO's analysis examined the number of veterans who already use VA's health care services and the number who may use them in the future, as well as their primary health conditions:

- Of the 2.3 million active-duty military personnel and reservists who had deployed to combat operations in Iraq and Afghanistan by the end of March 2011, 1.3 million have become eligible for VA's health care services. Of those 1.3 million people, almost 685,000 (52 percent) have sought medical care from VHA since 2002.
- Through June of this year, close to 44,600 service members had been wounded in action during those operations. For the recently concluded Operation Iraqi Freedom, the survival rate among all wounded troops averaged 90.2 percent; by comparison, the survival rate during the Vietnam conflict was 86.5 percent.
- Department of Defense (DoD) statistics indicate that through the end of March 2011, about 1,570 service members had required amputations, including over 3 percent of all troops wounded in action. Service members who undergo amputations receive their initial treatment in the military health care system. Many choose to remain in uniform; those who separate from the military may continue to receive their medical care and rehabilitation services through VHA.
- Through March of this year, the most common medical conditions diagnosed among the OCO veterans who had ever used VA's health care services were musculoskeletal disorders, which affect muscles, nerves, tendons, ligaments, joints, cartilage, or spinal disks (55 percent of OCO veterans who had ever used VHA), and mental health problems (51 percent of such veterans). (Those numbers sum to more than 100 percent because veterans may be diagnosed with multiple conditions.)

Traumatic brain injury, or TBI (an injury to the brain arising from sudden trauma to the head), and mental health disorders—particularly post-traumatic stress disorder, or PTSD (an anxiety disorder triggered by a traumatic event)—are often cited as conditions whose treatment could result in substantial future costs for VHA. At the request of the House Committee on Veterans' Affairs, CBO is analyzing the number of veterans diagnosed with those conditions within VHA and the costs to treat them, but those results are not yet available. For the numbers presented here based on last fall's study, CBO projected the total costs to treat OCO veterans on the basis of broad categories of medical services, incorporating observed changes in OCO veterans' use of services in the years following their enrollment;² it did not build the projections using the prevalence or costs of specific medical conditions. CBO's analysis to date suggests the following:

2. VHA is required by law to manage the provision of its services through an enrollment system, which assigns veterans to one of eight priority groups for treatment.

- A great deal of uncertainty surrounds the prevalence of PTSD and TBI within the OCO population and, hence, the number of veterans with those conditions whom DoD, VHA, and other health care providers may encounter in the future. (Prevalence is an estimate of the proportion of cases of a disease or condition in a population, whether or not an individual has received a diagnosis from a medical professional.) Published research has offered a wide range of estimates of the prevalence of the two conditions, because of substantial differences in the assessment tools researchers used to identify the conditions, the stringency of the criteria they employed to determine cases, and the subgroups of service members they studied.
- By the end of March of this year, DoD clinicians had diagnosed PTSD in about 75,000 service members either during their deployment to an overseas contingency operation or after their return. Among OCO veterans who had received medical care from VHA over the same period, about 187,000 (27 percent) had been diagnosed with PTSD. The estimates from DoD and VHA are not additive: There is an unknown amount of overlap because some veterans have been treated in both systems. Published studies of OCO service members or veterans have reported estimates of the prevalence of PTSD that generally range between 5 percent and 25 percent; the rate of diagnoses among VHA patients is at the high end of that range. Such a relationship would not be surprising if veterans who suspected they had mental health or other medical problems were more likely than other veterans to seek medical care from VHA.
- Through March 2011, DoD clinicians had diagnosed symptomatic TBI (in which symptoms, such as headaches, memory difficulties, or sleep problems, persisted at the time of medical screening or examination) in a total of 35,000 service members during or just after they returned from deployments to overseas contingency operations. The most recent data available indicate that about 90 percent of those injuries were classified as mild TBI—also known as a concussion—in which the brain typically heals quickly (within a few weeks or months).
- VHA researchers have reported that its clinicians diagnosed symptomatic TBI in about 26,000 (7 percent) of new OCO patients who were screened from the implementation of its screening program in 2007 through 2009. That rate of diagnosis is consistent with the limited data published by other researchers. (The two departments' estimates do not yield a comprehensive total through 2011 because their reporting time frames are different.) Although the rate of diagnosis within VHA should not be used to estimate the prevalence of TBI in the overall OCO population, it remains useful in projecting the medical services that veterans will expect from VHA and the costs VHA could face as a result. Other factors also influence veterans' use of services, including VHA's outreach efforts, the availability and cost of other options for health care (for instance, employment-based health insurance), and veterans' satisfaction with the quality of the care that VHA provides.

VA's Health Care Program

With appropriations of \$52 billion in fiscal year 2011 for medical care and research, VHA operates VA's medical centers and clinics and provides health care and rehabilitation services to veterans. VHA's medical personnel also provide emergency management services, train medical students and other health care providers, and conduct research. The health care system consists of about 150 medical centers; 950 ambulatory care and community-based outpatient clinics; 230 facilities known as Vet Centers, which provide readjustment counseling and outreach services; 130 nursing homes; and more than 150 rehabilitation and home care programs. In 2010, VHA's outpatient clinics tallied over 80 million visits by veterans for services that included routine health assessments, specialty care, and outpatient surgery. VHA employed a total of about 245,000 full-time-equivalent employees in 2010, including nearly 17,000 physicians and 67,000 nurses and nursing assistants.

To better care for injured veterans of recent overseas contingency operations, VHA established what it calls its Polytrauma System of Care, which includes four Polytrauma Rehabilitation Centers and additional secondary sites and clinical teams. Those facilities provide rehabilitation and treatment for returning service members and veterans who are recovering from multiple traumatic injuries. VHA has also enhanced its mental health services, adding more than 7,500 full-time-equivalent mental health staff and training more than 4,000 staff members in providing psychotherapy for veterans who suffer from post-traumatic stress disorder. In 2007, VHA began screening all OCO veterans who use VHA's services to identify cases of symptomatic TBI (in which symptoms, such as headaches or sleep problems, persist at the time of a veteran's medical screening or examination).³

VHA expects to obligate \$2.4 billion in fiscal year 2011 to provide health care to OCO veterans, a real (inflation-adjusted) increase of 24 percent above the \$1.9 billion it obligated for that purpose in 2010 (see Table 1). Between 2005 (the year VHA began to separately report spending for OCO veterans' care) and 2010, the agency spent a total of \$6 billion (in 2011 dollars) on those veterans' treatment. In real terms, the year-to-year growth in VHA's spending for OCO veterans averaged nearly 50 percent in those years. A large portion of that growth stemmed from rising enrollment in VA's health care system; however, increases in the number of services used per enrollee and in the rate of medical inflation above that of general inflation also contributed. For example, the use of ambulatory services (such as visits to physicians) per OCO enrollee grew by 7 percent or more annually from 2006 to 2010.

In 2010, VHA obligated an average of \$4,800 per OCO patient, compared with the \$8,800 per patient it obligated for veterans of all eras and conflicts being treated at VHA. As a result, although OCO veterans accounted for 7 percent of all enrollees

3. VA policy mandates that all new OCO patients be screened for symptomatic TBI; however, those veterans who report a prior traumatic brain injury are not required to complete the screening questionnaire and are not included in the TBI rates reported by VHA researchers.

Table 1.

Number of OCO Veterans Treated Each Year by VHA and Average Amounts Obligated Each Year per OCO Patient

	Actual						Projected,
	2005	2006	2007	2008	2009	2010	2011
Number of OCO Veterans Treated	101,800	155,300	205,600	261,000	332,900	400,100	476,500
Amounts Obligated							
Millions of 2011 dollars	260	440	690	1,060	1,490	1,930	2,400
Percentage change from previous year	n.a.	69	57	54	41	30	24
Average Amounts Obligated Yearly per OCO Patient (2011 dollars)	2,600	2,840	3,370	4,080	4,490	4,820	5,030

Source: Congressional Budget Office based on budget requests by the Department of Veterans Affairs for fiscal years 2007 through 2012.

Notes: Overseas contingency operations (OCO) are recent and ongoing military operations in Iraq and Afghanistan.

An obligation is a commitment that creates a legal liability on the part of the government to pay for goods and services that are ordered or received. Such payments may be made immediately or in the future.

VHA = Veterans Health Administration; n.a. = not applicable.

who used VHA's services in 2010, their care was responsible for 4 percent of VHA's total medical costs for that year. The lower cost of OCO veterans' care is largely attributable to their relative youth; the cost of the care provided to non-OCO veterans under the age of 45 is similar.⁴ Moreover, CBO expects that over time, as the OCO veterans develop age-related medical conditions, the costs for their care will rise and be close to those for the care of other older veterans who use VHA's services.

Eligibility for and Use of VHA

Two of the factors that determine VHA's future costs are the number of veterans who are eligible for health benefits and the extent to which those veterans use VHA's services.

Eligible Veterans

Eligibility for health care provided by VHA is based primarily on a veteran's military service. Generally, veterans who had been part of the active component of one of the services must have served 24 continuous months on active duty and been discharged under other than dishonorable conditions. Reservists and National Guard members who are called to active duty under a federal order may also qualify for VA's health

4. Nearly 70 percent of OCO veterans who use VA's health care services are under the age of 40, and all but 1 percent are under the age of 60. By contrast, about 45 percent of all veterans enrolled in VHA are age 65 or older.

care benefits. Those broad criteria, however, do not necessarily guarantee access to medical treatment because VA restricts enrollment according to the resources it has available. Specifically, VHA operates an enrollment system that assigns a veteran to one of eight categories to establish his or her priority for using its health care services. Veterans with higher priority include those who have service-connected disabilities, low income, or both. In January 2003, VA imposed a general freeze (with some subsequent modifications) on new enrollments in the lowest priority group (Priority Group 8).⁵

The Veterans Programs Enhancement Act of 1998 (Public Law 105-368) guarantees access to VA's health care system, after separation from active military service, to members of the armed forces who have served on active duty in combat operations since November 1998; moreover, reservists and members of the National Guard are included under that guarantee. The law gave combat veterans a two-year period of eligibility for enrollment after leaving active duty, waiving any requirements for them to document that their income is below established thresholds or to demonstrate a service-connected disability, which veterans who have not served in combat operations must do. In 2008, lawmakers extended the eligibility period to five years.⁶ Once enrolled, OCO veterans may continue to use VHA's services when the five-year period of enhanced eligibility ends, but their priority group for enrollment may change, depending on their disability status and income. In particular, OCO veterans may be moved to a lower priority group, including Priority Group 8. Once reclassified, veterans are required to make the standard copayments for services that are applicable to their priority group.

Under those legislative authorities, VHA provides free health care for medical conditions directly or potentially related to a veteran's military service in combat operations over the past decade. VHA also treats combat veterans for non-combat-related conditions but may bill the veteran's third-party insurance (if any) or charge the veteran a copayment unless he or she is in a higher priority group. By the end of March 2011, about 1.3 million veterans of recent U.S. military operations had become eligible for VHA's services—710,000 members who had served in the active component and 605,000 members who had served in the reserves and National Guard.⁷

5. Priority Group 8 veterans are those who have no service-connected disabilities or who, VA has determined, have service-connected disabilities that are ineligible for monetary compensation; they also have annual income or net worth above both VA's means-test threshold and its regional income threshold.

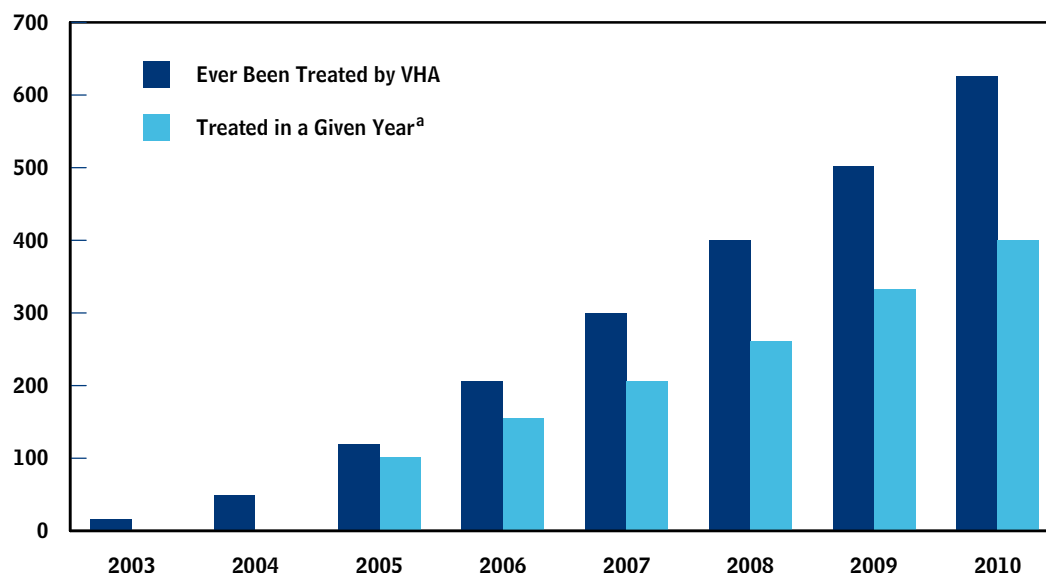
6. See title XVII of the National Defense Authorization Act for Fiscal Year 2008, P.L. 110-181, 122 Stat. 493.

7. Some members of the reserves and National Guard who have returned from recent military operations may retain their reserve affiliations—making them potentially subject to future call-ups—but at the same time be immediately eligible to enroll in VA's health care system.

Figure 1.

Number of Veterans of Overseas Contingency Operations Treated by VHA

(Thousands)



Source: Congressional Budget Office based on data from the Veterans Health Administration (VHA).

Note: Overseas contingency operations are recent and ongoing military operations in Iraq and Afghanistan.

a. Data on veterans of overseas contingency operations who were treated by VHA in a given year are not available before 2005.

Extent and Nature of the Services Used by Veterans of Overseas Contingency Operations

Of the 1.3 million OCO veterans eligible for VA's health care services, just over half had used such services at least once by the end of March 2011—specifically, 375,000 (52 percent) of the 710,000 active-component members who had separated from military service plus 310,000 (51 percent) of the 605,000 demobilized members of the reserves or National Guard.⁸ The number of such veterans (those who have ever used the system) has grown rapidly—by upwards of 100,000 veterans annually—in most of the past several years (see Figure 1). In any given year, not all of those veterans seek care: By the end of fiscal year 2010, for example, some 625,000 OCO veterans had used VHA's services at some point, but only 400,000 of them were treated during that year.

8. Department of Veterans Affairs, Veterans Health Administration, Office of Public Health, *Analysis of VA Health Care Utilization Among Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND) Veterans* (July 2011).

For those veterans who use VA's health care system, most seek care for the first time shortly after they leave military service. For example, 15 percent of active-duty personnel who separated from the military in 2005 used the system within three months of separation, and an additional 16 percent did so within the next nine months. In the second year after separation, 7 percent of that 2005 cohort became new users of VHA's services, and about 4 percent sought care for the first time in each of the following three years. In general, the proportion of veterans who seek care at VHA soon after they separate from the military has been increasing with each successive separating cohort. That trend may indicate that more veterans are aware of the services that VHA provides or that more are in greater need of its services.

Through March 2011, musculoskeletal disorders and mental health problems were the most common diagnoses among the OCO veterans who had used VA's health care services. According to VHA data, since 2002, a total of about 377,000 OCO veterans, or 55 percent of those who had ever been treated by VHA, had received a diagnosis for a musculoskeletal condition. In addition, 350,000 such veterans, or 51 percent of the total, had been diagnosed with a mental health condition.⁹ (Those numbers are not mutually exclusive; veterans may be diagnosed with multiple conditions.)

VHA data through 2008 show that the use of ambulatory and inpatient hospital services to treat OCO veterans' conditions follows similar patterns. On average, the use of such services is greatest in the months immediately after a veteran enrolls and then declines steadily during the following several months, stabilizing at the end of the first year after enrollment. By the end of the second year, the use of both types of services drops to about one-third of the initial rate. The only notable exception to that pattern is found in outpatient psychiatric visits, which hold steady at about 110 per month for every 1,000 enrollees through the three years following enrollment. Enrollees' use of pharmacy services also follows a different pattern from that for ambulatory and inpatient services: Use of pharmacy services spikes soon after enrollment and then increases steadily for the next few years.

The generally downward trend in the use of ambulatory and inpatient hospital services within each new group of enrollees has several possible explanations. Some veterans who find civilian employment—or, in the case of reservists, those who return to their previous jobs—may prefer to use private health care providers for most or all of their care, particularly if they do not have any service-connected injuries or conditions. Other veterans may turn to private sources of care after receiving a health screening or completing treatment for a medical condition at VHA. As those veterans develop age-related conditions over the next decades, however, their medical needs will increase, and some of them may return to VHA or use more of its services. That

9. Some of those diagnoses were provisional and might or might not have been confirmed during subsequent visits.

sort of pattern has been observed for veterans who deployed to the first Gulf War (August 1990 through July 1991).¹⁰

Medical Status of Military Personnel Who Return from Overseas Contingency Operations

As of the end of March 2011, 2.3 million military personnel had deployed to contingency operations in Iraq or Afghanistan. Some of those personnel have been killed or injured or have developed medical conditions that require ongoing treatment. The number of service members who have been wounded and the types and severity of the wounds they have suffered are two of the factors that affect the number of veterans who will use VHA's services and the resources that will be needed to pay for that care.

Medical Conditions of Military Personnel While Deployed

A total of almost 44,600 service members have been wounded in action during Operation Iraqi Freedom, Operation New Dawn, and Operation Enduring Freedom. Because Operation Iraqi Freedom officially came to a close on August 31, 2010, final tallies of casualty statistics are available. During that conflict, a total of 31,930 service members were wounded in action. About 40 percent of them, or 12,880 service members, did not return to duty within 72 hours of being wounded, and among those, 8,940 required aeromedical evacuation out of the Iraq theater of operations. An additional 10,360 service members were evacuated because of nonbattle injuries (those resulting from occupational accidents, motor vehicle accidents unrelated to combat, and other causes), and 30,030 service members were evacuated because of a disease or another medical condition.¹¹

In Operation Iraqi Freedom, the 31,930 service members wounded in action sustained those injuries at a rate of 2,380 per 100,000 person-years at risk (the standard metric for such calculations, which is derived from the number of full-time-equivalent service members in the combat theater).¹² That rate is much lower than the rate

10. Department of Veterans Affairs, *Gulf War Era Veterans Report: Pre-9/11* (February 2011), www.va.gov/vetdata/Report.asp.

11. The casualty statistics are drawn from a Department of Defense Web site, <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

12. Because deaths and injuries occur throughout a given year and troop levels vary, a single-point-in-time inventory provides a poor measure of risk. Nor would it be satisfactory, in the case of Operation Iraqi Freedom, to count the total number of troops passing through the Iraq theater of operations during one year because the lengths of the tours of duty of service members varied: The Marine Corps generally rotated units through the theater every 7 months, whereas the Army, at different points in time, had either 12-month or 15-month deployments. By analyzing DoD's quarterly reports on numbers of troops deployed to the Iraq theater, CBO estimated that U.S. military forces had about 1.3 million person-years at risk during Operation Iraqi Freedom. The calculations here update those in Matthew S. Goldberg, "Death and Injury Rates of U.S. Military Personnel in Iraq," *Military Medicine*, vol. 175, no. 4 (April 2010), pp. 220–226, which are in turn based on a methodology developed by Samuel Preston and Emily Buzzell, "Mortality of American Troops in the Iraq War," *Population and Development Review*, vol. 33, no. 3 (September 2007), pp. 555–566.

during the Vietnam War: 11,640 per 100,000 person-years at risk. In addition, the survival rate of troops wounded in Iraq is higher than the survival rate during the Vietnam War: 90.2 percent of the service members wounded in action during Operation Iraqi Freedom survived their wounds versus 86.5 percent of all troops wounded during the Vietnam War. Had the survival rate after being wounded in Operation Iraqi Freedom been equal to the rate prevailing during the Vietnam War, about 1,300 additional wounded service members—the equivalent of two battalions—would have died in the operation.

The widespread use of body armor and hemostatic bandages (which promote blood clotting) has enabled some soldiers to survive what would otherwise have been fatal injuries. Battlefield medicine has changed in other ways as well: Instead of evacuating wounded troops to medical stations, medical teams often move with frontline troops or to them when injuries occur.¹³ In addition, when wounded troops need to be evacuated to receive more sophisticated medical care, that process takes place much more rapidly than it did during the Vietnam War. During that earlier conflict, it typically took 1 day to evacuate a wounded soldier to a field hospital, 7 days to evacuate him to a theater-level hospital (one that offered significant capability in the surgical subspecialties), and a total of 45 days to return him to the United States. In the Iraq operation, the timelines were shortened: A wounded soldier typically arrived at the theater-level hospital between 1 and 24 hours after an injury, at Landstuhl Medical Center in Germany (via specially equipped C-17s) within 24 to 72 hours, and then in the United States within a matter of days.

DoD data indicate that the great majority of service members evacuated as a result of battle-related injuries through 2007 were able to resume their military duties: By the end of that year, only one-quarter of them had separated from military service for any reason. Nevertheless, some service members have sustained severely disabling injuries, such as amputations and serious brain injuries, while deployed to Iraq or Afghanistan. Although definitive data on the number of seriously ill or disabled veterans of those operations are not readily available, a recent study sheds some light on the magnitude. The authors of that study estimate that during the 2003–2008 period, about 4,500 seriously wounded, injured, or ill veterans (0.5 percent of all veterans who had served in those conflicts through 2008) needed a caregiver and those caregivers were required for an average of 19 months.¹⁴ Additional data from VA's Traumatic Injury Protection Under Servicemembers' Group Life Insurance (TSGLI) program also allow a rough estimate of the number of service members who have been severely disabled by war-related injuries. TSGLI provides a financial benefit to service members who experience certain traumatic injuries (on or off duty), such as total and permanent loss of hearing, sight, or speech; amputation; or severe brain injury. (The benefit does not cover all injuries that may lead to severe impairment.) Through

13. Richard Jadick, *On Call in Hell: A Doctor's Iraq War Story* (New York: NAL Caliber, 2007).

14. Eric Christensen and others, *Economic Impact on Caregivers of the Seriously Wounded, Ill, and Injured* (Alexandria, Va.: CNA Corporation, April 2009), p. 3.

September 2010, a total of 6,000 veterans of recent overseas contingency operations, equal to 0.5 percent of all veterans who had served in those conflicts by that date, had received benefits from the TSGLI program.

For every service member evacuated from Iraq or Afghanistan as a result of a battle injury, roughly one other has been evacuated because of a nonbattle injury, and three others have been evacuated as a result of a disease or some other medical condition. Among the 41,800 service members who have been evacuated to facilitate treatment for a disease or another medical condition, disorders of the musculoskeletal system or connective tissue (19 percent) and mental disorders (16 percent) were the most common. Among mental disorders, the two most common classes seen were depression and depressive disorders (4.5 percent of all medical evacuations for a disease or other medical condition) and adjustment disorders, including post-traumatic stress disorder (4.2 percent of such evacuations).

**War-Related Medical Conditions Receiving Widespread Attention:
Amputations, Traumatic Brain Injury, and Post-Traumatic Stress Disorder**

In public discussion of the wars in Iraq and Afghanistan, three types of injuries or medical conditions have variously been identified as “signature conditions” of those conflicts: amputations, post-traumatic stress disorder, and traumatic brain injury. About 75 percent of the amputations undergone by service members who served in overseas contingency operations resulted in the loss of one or more major limbs; the remaining 25 percent involved the loss of fingers, toes, hands, feet, or partial limbs. PTSD, which is induced by exposure to a traumatic event, is characterized by symptoms that include a reexperiencing of the event, hyperarousal (such as irritability or exaggerated startle response), and diminished responsiveness to or avoidance of stimuli associated with the trauma. TBI, arising from sudden trauma to the head, may result in a decreased level of consciousness, amnesia, or neurological or intracranial abnormalities. TBI is classified at the time of the injury as mild, moderate, or severe. (Mild TBI, which is also known as a concussion, may lead to ongoing symptoms that include headaches, memory difficulties, or sleep problems.)¹⁵

Of those three conditions, PTSD was the one most commonly diagnosed among service members by DoD clinicians through March 2011 (accounting for about 75,000 cases), followed by mild and more-severe cases of TBI (about 29,000 and about

15. The standard definition of mild TBI is given in T. Kay and D.E. Harrington, “Definition of Mild Traumatic Brain Injury,” *Journal of Head Trauma Rehabilitation*, vol. 8, no. 3 (September 1993), pp. 86–87. Among other criteria, any loss of consciousness in mild TBI is limited to at most 30 minutes, and loss of memory for events after the accident (post-traumatic amnesia) is limited to at most 24 hours. DoD and VA impose one additional criterion for mild TBI: normal brain imaging results. Service members who meet the criteria for mild TBI but have abnormal brain imaging results are rated as having moderate TBI. Service members who meet the criteria for more than one severity level are rated at the higher severity. See Department of Defense and Department of Veterans Affairs, *VA/DoD Clinical Practice Guideline for Management of Concussion/Mild Traumatic Brain Injury* (March 2009).

3,000, respectively) and amputations (involving about 1,600 service members). TBI and PTSD seem to co-occur with some frequency: According to one study, among soldiers who had just returned from a deployment to Iraq, about one-third who reported suffering a traumatic brain injury also screened positive for PTSD.¹⁶

The prevalence of those conditions in the current and future OCO veteran population and those veterans' subsequent use of VHA's services will affect the agency's future costs. (Prevalence is an estimate of the proportion of cases in a population, whether or not an individual has received a diagnosis from a medical professional.) For some medical conditions, such as amputations, a census of affected service members exists, and prevalence is known; for other conditions, such as PTSD and TBI, prevalence is uncertain, which makes it more difficult to gauge the resources needed for the treatment of those conditions.

Methodologically, the "gold standard" for determining the prevalence of PTSD and TBI in the OCO population would be to develop a representative, or random, sample of people from that population and have medical personnel evaluate each person for the presence of the conditions. But achieving such an ideal would be expensive and difficult to undertake. Instead, some researchers use administrative data on diagnoses to tabulate numbers of cases, a method that will generally understate prevalence in the population because not everyone seeks care from either DoD or VHA for their deployment-related conditions. Other researchers use clinical screening tools, such as questionnaires or structured interviews, as the basis for identifying cases. Some researchers who report the numbers of cases of PTSD on the basis of such tools use low thresholds for assessing that condition. In so doing, however, they may also generate "false positives" (results that indicate the condition is present when it is not) and overestimate the number of cases. Conversely, researchers who process screening results using more-restrictive thresholds could underestimate cases.

Another problem with existing research on prevalence is that most studies to date have oversampled certain groups within the OCO population, an approach that is unlikely to yield accurate measurements. On the one hand, using samples drawn from combat units, whose members tend to experience more intense physical and psychological trauma than do the members of other types of units, may lead to prevalence estimates that are too high to apply to the general population of service personnel in a combat region, which includes logistical and support units. On the other hand, using samples based on returning uninjured troops may lead to prevalence rates that are too low.

Amputations. Through March 2011, more than 3 percent of service members wounded in action during the conflicts in Iraq and Afghanistan (1,359 service members) had required amputations; another 209 service members had required amputations as a result of nonbattle injuries (most often motor vehicle or other accidents or crush injuries) or disease. As of the end of March, the rates of amputation

16. Charles W. Hoge and others, "Mild Traumatic Brain Injury in U.S. Soldiers Returning from Iraq," *New England Journal of Medicine*, vol. 358, no. 5 (January 31, 2008), pp. 453–463.

resulting from injuries in battle were 3.5 percent among the wounded in Operation Enduring Freedom and 3.1 percent among the wounded in Operation Iraqi Freedom and Operation New Dawn combined. Of all battle-related amputations, 925 (68 percent) were due to the effects of improvised explosive devices.¹⁷ Among the total of 1,568 service members who required amputations for any reason, 867 lost a single major limb, 292 lost two limbs, and 27 lost three or more limbs. Several hundred other service members lost (sometimes in combination) fingers, toes, hands, feet, or partial limbs. Future health care costs for veterans with amputations will vary: Virtually all will receive some forms of physical and occupational therapy, but the more severely injured may have related long-term medical issues and will also be provided with and trained in the use of prosthetic replacements.

Traumatic Brain Injuries. The number of traumatic brain injuries attributable to service in overseas contingency operations is difficult to measure. Some cases of TBI may be identified in the combat theater, most easily when a soldier suffers a penetrating head wound but also, in other cases, on the basis of indications such as loss of consciousness or amnesia. Cases of TBI that are not diagnosed in the combat theater may be diagnosed later, in many instances after the service member returns home if he or she continues to experience symptoms (for example, headaches, difficulties with memory, or sleep problems). DoD began a program in 2008 to screen all service members returning from overseas combat operations for indications of symptomatic TBI.

Between October 2001 and March 2011, DoD reports, military clinicians diagnosed TBI in 35,000 service members who showed symptoms during their deployment to overseas contingency operations or soon after they returned.¹⁸ As of DoD's most recent report, about 90 percent of those cases of TBI were deemed mild. (Most people who have mild cases recover in weeks or months, although a small portion may have effects that linger for more than a year.)¹⁹

Other findings on the prevalence of TBI are available from a few recent studies that used data from DoD. Estimates of the proportion of service members deployed to overseas contingency operations who experienced a traumatic brain injury (including

17. An improvised explosive device (IED), also known as a roadside bomb, is a homemade bomb constructed and deployed in ways other than in conventional military action. IEDs may be constructed of conventional military explosives, such as an artillery round, attached to a detonating mechanism; they may be used in terrorist actions or in unconventional warfare by guerrillas or commando forces in a theater of operations.

18. Department of Defense, *Medical Surveillance Monthly Report*, vol. 18, no. 6 (June 2011), p. 17, www.afhsc.mil.

19. See Michael A. McCrea, *Mild Traumatic Brain Injury and Postconcussion Syndrome: The New Evidence Base for Diagnosis and Treatment* (New York: Oxford University Press, 2008); and Heather G. Belanger and others, "Factors Moderating Neuropsychological Outcomes Following Mild Traumatic Brain Injury: A Meta-Analysis," *Journal of the International Neuropsychological Society*, vol. 11 (2005), pp. 215–227.

those who no longer had symptoms) generally range from 15 percent to 23 percent, depending on the methods a given study used to assess the presence of an injury and the population being sampled.²⁰ That range, however, does not reveal the intensity or persistence of symptoms over time but merely how many service members may have sustained such an injury. In addition, the estimates of prevalence from those studies may be inaccurate because the analyses suffer from some of the biases discussed above. A limited body of research suggests that only a fraction of the service members who sustained a TBI continued to experience symptoms over the longer term that might have been caused by that injury. In one study, 23 percent of soldiers in an Army brigade combat team experienced a traumatic brain injury during a one-year deployment to Iraq; however, only 9 percent of soldiers within that brigade reported at least one ongoing symptom when they were screened a few days after returning home from the deployment, and only 4 percent reported at least two ongoing symptoms.²¹

From the implementation of VHA's screening program for TBI through 2009, about 7 percent of the new OCO patients screened were diagnosed with symptomatic TBI. Those cases are in addition to the cases identified by DoD. The VHA data may be useful in planning for the medical services that veterans will need from VA's health care system, but they do not answer the broader question of how many veterans in total have symptomatic TBI. If service members who have separated from the military are more likely than those who have remained on active duty to have service-connected health problems, then the rate of diagnosis among VHA patients will be higher than the rate in the entire OCO population. It is possible, however, that the rate in the overall OCO population could be greater than the rate diagnosed among VHA patients if sufficient numbers of veterans with symptomatic TBI were either being treated for the condition elsewhere or not being treated at all. For example, some veterans have employment-based health insurance; others seek care from sources that are not tied to their military service, perhaps because providers are located more conveniently or are perceived to be more private; and still other veterans forgo care altogether.

Post-Traumatic Stress Disorder. DoD reports that from October 2001 through March 2011, military clinicians diagnosed PTSD in about 75,000 service members during or after their return from deployments to overseas contingency operations. Through March 2011, VHA had assigned a diagnosis of PTSD to 187,000 OCO veterans, or 27 percent of all such veterans who were using VHA's services.²² And for the

20. Terry Schell and Grant Marshall, "Survey of Individuals Previously Deployed for OEF/OIF," in Terri Tanielian and Lisa H. Jaycox, eds., *Invisible Wounds of War* (Santa Monica, Calif.: RAND Corporation, April 2008), pp. 87–115; Heidi Terrio and others, "Traumatic Brain Injury Screening: Preliminary Findings in a U.S. Army Brigade Combat Team," *Journal of Head Trauma Rehabilitation*, vol. 24, no. 1 (January/February 2009), pp. 14–23; and Charles W. Hoge and others, "Mild Traumatic Brain Injury in U.S. Soldiers Returning from Iraq."

21. Terrio and others, "Traumatic Brain Injury Screening."

22. Department of Veterans Affairs, Veterans Health Administration, Office of Public Health, *Analysis of VA Health Care Utilization among Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND) Veterans*.

same period, an additional 15,000 veterans who were not treated for PTSD at VHA hospitals did receive such treatment at Vet Centers. (DoD's and VHA's tabulations overlap by an undetermined amount, however, so the number of individuals diagnosed with PTSD is less than the sum of 277,000.)

The rates of diagnosed PTSD cases among VHA's patients should not be extrapolated to estimate the prevalence of that condition in the entire population of service members who have returned from overseas contingency operations. If veterans who suspected they had mental health or other medical problems were more likely than other veterans to seek medical care from VHA, the rate of diagnosed PTSD among VHA's patients would probably be higher than the prevalence among the entire OCO population. However, some veterans might not seek care from VHA for various reasons, perhaps because of concerns about the stigma associated with having a mental health problem or because of the inconvenience of undergoing additional evaluation and treatment. Such considerations could lead the rate of diagnosis among VHA's patients to be an underestimate of prevalence in the OCO population. Although the rate of diagnosed PTSD among VHA's patients is not necessarily indicative of the prevalence of PTSD in the overall population of OCO veterans, such information can be used to help project the kinds of medical services that veterans may need in the future and the potential costs for VHA to meet those needs.

In several published studies reporting the prevalence of PTSD among different groups of service members or veterans who deployed to overseas contingency operations, estimates have generally ranged between 5 percent and 25 percent. Those estimates vary widely because of substantial differences among the researchers in the assessment tools they used to determine the presence of the condition, the stringency of their criteria for identifying cases, and the subgroup of service members they studied.²³

Projections of VHA's Costs for Providing Medical Care

CBO has projected the resources that VHA would need between 2011 and 2020 to treat all OCO veterans who enrolled in VA's health care system.²⁴ (The fact that VHA is funded by annual discretionary appropriations, however, means that policymakers will ultimately choose the amount of funding.) The projections reflect the rapid growth occurring in the size of the OCO veteran population, the type and number of

23. For a survey of the literature, see Rajeev Ramchand and others, "Disparate Prevalence Estimates of PTSD Among Service Members Who Served In Iraq and Afghanistan: Possible Explanations," *Journal of Traumatic Stress*, vol. 23, no. 1 (February 2010), pp. 59–68.

24. The costs CBO projected are those for treating OCO veterans, but not all of those costs are specifically attributable to the veterans' participation in contingency operations in Iraq and Afghanistan. Some OCO veterans would have been eligible for VHA's services and would have used that system even if they had not deployed to those operations (for example, for treatment of normal age- or training-related injuries to the musculoskeletal system). If the objective of CBO's analysis were to estimate the incremental costs of the war, the costs for treating conditions not related to those veterans' deployments would have to be subtracted from the estimates of gross costs.

VHA's services that those veterans use, and trends in the cost of health care throughout the economy. To account for uncertainty about the numbers of service members deployed to overseas operations and the rate of growth of medical expenditures, CBO used two scenarios, incorporating plausible but different assumptions about those and other factors, to capture some of the span of possible outcomes. In CBO's estimation, the potential costs in 2020 for treating all enrolled OCO veterans would range between \$5.5 billion and \$8.4 billion (in 2011 dollars) under the two scenarios. Those figures compare with the \$1.9 billion that VHA spent to treat enrolled OCO veterans in 2010 and the total of \$6 billion that it spent between 2003 and 2010. (The projections in this section originally appeared and are described in more detail in the October 2010 CBO report *Potential Costs of Veterans' Health Care*.)

Using historical data from DoD and VHA, CBO estimated how many veterans would enroll in VHA in each year of the 2011–2020 projection period. It then estimated OCO veterans' use of seven broad categories of medical services in each year after enrollment, assuming that past trends in the use of services continued into the future. (That approach allows the mix of services to change as each cohort of enrollees ages.) CBO then applied projections of the growth in medical expenditures per person to the seven categories of services and estimated an annual stream of VHA's potential costs.

The two scenarios that CBO used differed on two main points. For Scenario 1, CBO assumed that the number of deployed service members would drop to 30,000 active-duty, reserve, and National Guard personnel by 2013 and remain at that number thereafter (although those personnel would not necessarily be in Iraq and Afghanistan).²⁵ Currently, the number of actual separations since 2002 among military personnel who have served in overseas contingency operations is 1.3 million; under this scenario, total separations through 2020 would equal 2.2 million personnel. For Scenario 1, CBO also assumed that VHA's health care expenditures per OCO enrollee for the seven major categories of service would grow at about the same rates as the national average expenditures for those services and that the patterns of enrollment among future OCO veterans and their use of services after they left the military would be similar to those of recent years.

For Scenario 2, CBO assumed that the number of service members deployed to overseas contingency operations over the 2011–2020 period would be a little more than twice the number reflected in the assumption underlying Scenario 1. Specifically, CBO assumed that forces would be drawn down more slowly through 2014, stabilize at 60,000 personnel at the beginning of 2015, and remain at that number thereafter. Separations by military personnel who deployed for overseas contingency operations

25. That drawdown, as well as the drawdown to 60,000 deployed service members assumed for Scenario 2, is described in Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2010 to 2020* (January 2010), pp. 14–15. The total number of troops that would be deployed under either scenario excludes U.S. military personnel who are permanently based overseas (in locations such as South Korea or Okinawa, Japan) but who are not engaged in contingency operations.

from 2002 through 2020 would exceed 2.6 million under this scenario. For expenditures per OCO enrollee under Scenario 2, CBO projected higher rates of growth than the rates it incorporated in Scenario 1. In general, CBO assumed that VHA's expenditures per OCO enrollee would grow at annual rates that were 30 percent higher than the rates underlying Scenario 1. Indeed, the cost per enrollee of providing medical services has generally been rising faster within VHA in the past few years than the cost per person in the general population and may continue to do so.

Projected Costs Under Scenario 1

Under Scenario 1's assumption that the number of deployed service members would drop to 30,000 by 2013, CBO estimated that from the beginning of hostilities in October 2001 through 2020, VHA would enroll 1.4 million OCO veterans and treat a total of 1.3 million of them. In that case, the annual resources (in 2011 dollars) required to provide care to those veterans would nearly triple over the coming decade, rising from \$1.9 billion in 2010 to roughly \$5.5 billion in 2020 (see Figure 2), for a total of \$40 billion.²⁶ By comparison, the annual resources needed to treat veterans in VHA from 2001 to 2020 who did not serve in overseas contingency operations would rise by almost 40 percent, CBO projects, from \$46 billion in 2010 to \$64 billion in 2020.

Annual costs would increase most rapidly in the early years of the projection period. The greatest amount of growth would occur in 2011 and 2012, when potential costs are projected to increase by 15 percent or more annually because of a large number of new enrollees. After that, the number of new enrollees per year would begin to fall. VHA's annual costs also would grow at a slower rate in part because enrollees incur the highest costs in the year after they enroll. By 2015, annual real increases in costs would be less than 10 percent and would fall to about 6 percent by the end of the projection period.

Rising enrollment over the period is responsible for a large portion of the increase in the estimated resources required to treat OCO veterans under Scenario 1. Treating the additional 720,000 OCO veterans projected to enroll between 2011 and 2020 would cost nearly \$3 billion in 2020, an amount equal, in CBO's estimation, to roughly half the costs projected for all OCO veterans in that year. The OCO veterans who had enrolled before 2011 would account for the remainder of those projected costs.

The aging of the OCO population is likely to have only a small effect on costs through 2020. According to data from VHA, nearly 70 percent of OCO veterans who use VA's health care system are under the age of 40, and all but 1 percent are under the age of 60. By contrast, about 45 percent of the U.S. population is over 40 years old, and almost 20 percent is at least 60 years old.²⁷ Because a large fraction of the OCO veteran population is relatively young—that is, in an age group in which medical costs

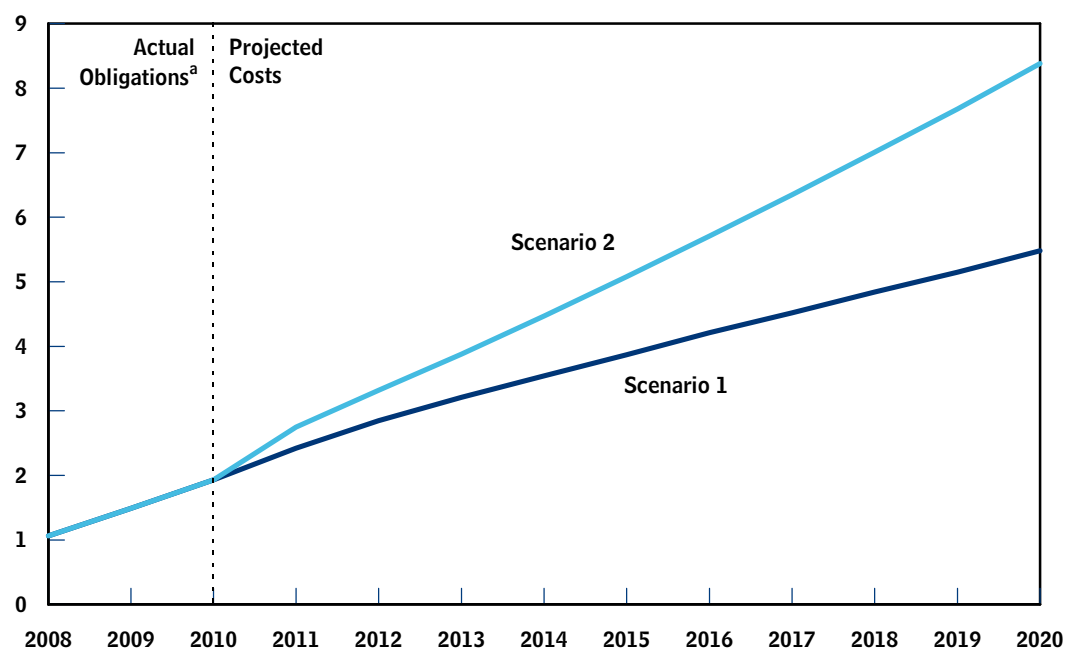
26. Including the funding already devoted to those veterans from 2002 to 2010 would boost that amount to \$46 billion.

27. The statistics about national aging are CBO's calculations based on data from the Census Bureau's Population Division.

Figure 2.

VHA's Potential Costs for Providing Health Care Services to Enrolled Veterans of Overseas Contingency Operations

(Billions of 2011 dollars)



Source: Congressional Budget Office.

Notes: At the time CBO performed its analysis, in 2010, actual data on the Veterans Health Administration's (VHA's) obligations for that year were not available. As a result, CBO used VHA's preliminary estimate of those obligations as the starting point for its projections of health care costs for veterans of overseas contingency operations (recent and ongoing military operations in Iraq and Afghanistan). The projections in the figure above are the same as those presented in the 2010 report of CBO's analysis, but they have been converted to 2011 dollars.

VHA is required by law to manage the provision of its services through an enrollment system; that system assigns veterans to one of eight priority groups for treatment. By comparison with Scenario 1, Scenario 2 incorporates assumptions of a larger number of enrolled veterans of overseas contingency operations and faster growth of medical expenditures per enrollee. (For additional details on the scenarios, see the text.)

- a. An obligation is a commitment that creates a legal liability on the part of the government to pay for goods and services that are ordered or received. Such payments may be made immediately or in the future.

are largely stable—their aging over the decade will probably have only a small effect on the resources required per OCO enrollee in 2020.²⁸

Moreover, because OCO veterans are typically younger and healthier than the average VHA enrollee, they are less expensive to treat. Accordingly, the costs overall to treat OCO veterans would remain relatively small throughout the projection period, consuming 8 percent of VA's resources for health care services in 2020 under Scenario 1. In later years, as OCO veterans reach older ages for which spending on medical care tends to be higher, the costs of medical care for OCO veterans might represent a larger share of VHA's total costs.

Projected Costs Under Scenario 2

Under Scenario 2's assumptions that a larger force would deploy and that medical expenditures per enrollee would grow faster than was assumed for Scenario 1, CBO projected that VHA would enroll 1.7 million OCO veterans and, from the beginning of hostilities through 2020, treat a total of 1.5 million of them. By CBO's estimates, the resources VHA would need to treat OCO veterans in 2020 under Scenario 2 would be substantially greater than those required under Scenario 1—\$8.4 billion (in 2011 dollars), compared with \$5.5 billion (see Figure 2). As was the case under Scenario 1, the largest growth in costs under Scenario 2 would occur early in the projection period: Costs would rise by more than 40 percent in 2011 and by 20 percent in 2012. After that, annual growth would slow, dropping to 9 percent by 2020. Costs over the entire period under Scenario 2 would total \$55 billion, compared with \$40 billion under Scenario 1.

The faster growth in expenditures per enrollee under Scenario 2 accounts for roughly two-thirds of the difference between the two scenarios' projected costs for 2020. By comparison, the assumption incorporated in Scenario 2 of a larger number of service members deployed to overseas contingency operations accounts for only about one-third of the difference in costs.

Although Scenario 2 would involve higher costs for treating OCO veterans than would Scenario 1, those costs would still represent, in CBO's estimation, only about 10 percent of VHA's total costs in 2020.

28. See E. Meara and others as cited in Uwe Reinhardt, "Does the Aging of the Population Really Drive the Demand for Health Care?" *Health Affairs*, vol. 22, no. 6 (2003), p. 28. That research indicates that annual medical costs for the U.S. population between the ages of 35 and 44 are similar to costs for people ages 25 to 34. Costs for people ages 44 to 54 are about 40 percent higher than costs for those between 25 and 34 years of age. The largest increases in costs occur after age 55: Compared with costs for 25-year-olds, costs are twice as high for people ages 55 to 64 and three times as high for those ages 65 to 74.

